CLAIMS:

1. A jacket frame offshore floating structure, comprising:

at least one elongate open cross-braced jacket frame formed of tubular members interconnected together defining an interior, and having first and second ends;

at least one first buoyancy capsule disposed in said interior near said first end adapted to be connected with ballast control means for selectively adjusting the buoyancy thereof; and

weight adjusting means disposed near said second end for adjusting the weight of said structure selected from the group consisting of at least one second buoyancy capsule disposed in said interior and at least one keel tank, adapted to be connected with pump means for selectively pumping water in and out thereof; wherein

the buoyancy of said at least one first buoyancy capsule is adjustably tuned to provide a buoyant force and a sufficient water plane area and moment of inertia required for stability of said floating structure; and

the water mass and weight of said weight adjusting means is adjustably tuned to raise or lower the center of gravity of the entire mass of said floating structure with respect to its center of buoyancy according to ballast and variable or fixed loads including deck payloads, to stabilize the structure, and to compensate for different operational, environmental, survival and installation stages of the structure.

2. The jacket frame offshore floating structure according to claim 1, further comprising:

at least one deck platform secured to said first end of said at least one jacket frame.

3. A jacket frame SPAR type offshore floating structure, comprising:

an elongate vertical support column formed of an open cross-braced jacket framework of tubular members interconnected together defining an interior, and having upper and lower ends;

at least one generally cylindrical first buoyancy capsule having enclosed top and bottom ends disposed in said interior near said upper end including ballast control means for selectively adjusting the buoyancy thereof; and

weight adjusting means disposed near said lower end for adjusting the weight of said structure selected from the group consisting of at least one second buoyancy capsule and at least one keel tank, adapted to be connected with pump means for selectively pumping water in and out thereof; wherein

the buoyancy of said at least one first buoyancy capsule is adjustably tuned to provide a buoyant force and a sufficient water plane area and moment of inertia required for stability of said floating structure; and

the water mass and weight of said weight adjusting means is adjustably tuned to raise or lower the center of gravity of the entire mass of said floating structure with respect to its center of buoyancy according to ballast and variable or fixed loads including deck payloads, to stabilize the structure, and to compensate for different operational, environmental, survival and installation stages of the structure.

4. The jacket frame SPAR type offshore floating structure according to claim 3, wherein

said at least one first buoyancy capsule at said upper end of said vertical support column is of sufficient length to be partially submerged and allow oscillation of the trough and crest of waves within its top and bottom ends.

5. The jacket frame SPAR type offshore floating structure according to claim 3, further comprising:

a deck platform secured to said upper end of said vertical support column.

6. The jacket frame SPAR type offshore floating structure according to claim 3, further comprising:

mooring line support means on said vertical support column for supporting mooring lines thereon.

7. The jacket frame SPAR type offshore floating structure according to claim 3, further comprising:

riser support means on said vertical support column for supporting risers thereon.

8. The jacket frame SPAR type offshore floating structure according to claim 3, wherein said weight adjusting means comprises at least one generally cylindrical second buoyancy capsule having enclosed top and bottom ends disposed in said interior near said lower end in vertically spaced relation to said at least one first buoyancy capsule.

9. The jacket frame SPAR type offshore floating structure according to claim 8, further comprising:

riser support means associated with said at least one first buoyancy capsule and said at least one second buoyancy capsule for supporting risers thereon.

10. The jacket frame SPAR type offshore floating structure according to claim 8, wherein said at least one first buoyancy capsule comprises a plurality of said first buoyancy capsules disposed in circumferentially spaced relation; and.

said at least one second buoyancy capsule comprises a plurality of said second buoyancy capsules disposed in circumferentially spaced relation and vertically spaced relation to said plurality of said first buoyancy capsules.

11. The jacket frame SPAR type offshore floating structure according to claim 8, wherein said at least one first buoyancy capsule and said at least one second buoyancy capsules each comprise a cylindrical outer side wall and a cylindrical inner side wall defining a central opening extending therethrough.

12. The jacket frame SPAR type offshore floating structure according to claim 8, wherein said at least one first buoyancy capsule and said at least one second buoyancy capsule are formed of materials with watertight integrity suitable for marine applications selected from the group consisting of steel, aluminum, titanium, fiber reinforced materials, and composite materials.

13. The jacket frame SPAR type offshore floating structure according to claim 3, wherein said weight adjusting means comprises at least one keel tank disposed at said lower end of said vertical support column.

14. A jacket frame column-stabilized offshore floating structure, comprising:

a plurality of spaced apart vertical support columns each formed of an open cross-braced jacket framework of tubular members interconnected together defining an interior, and having upper and lower ends;

a plurality of horizontally disposed truss members each formed of an open cross-braced framework of tubular members defining an interior and first and second ends interconnecting said lower ends of said vertical support columns together in spaced apart relation;

at least one generally cylindrical first buoyancy capsule having enclosed top and bottom ends disposed in said interior near said upper ends of said vertical columns including ballast control means for selectively adjusting the buoyancy thereof; and

weight adjusting means disposed near said lower ends of said vertical columns for adjusting the weight of said structure selected from the group consisting of at least one second buoyancy capsule and at least one keel tank, including pump means for selectively pumping water in and out thereof; wherein

the buoyancy of said at least one first buoyancy capsule is adjustably tuned to provide a buoyant force and a sufficient water plane area and moment of inertia required for stability of said floating structure; and

the water mass and weight of said weight adjusting means is adjustably tuned to raise or lower the center of gravity of the entire mass of said floating structure with respect to its center of buoyancy according to ballast and variable or fixed loads including deck payloads, to stabilize the structure, and to compensate for different operational, environmental, survival and installation stages of the structure.

15. The jacket frame column-stabilized offshore floating structure according to claim 14, wherein

said at least one first buoyancy capsule at said upper ends of said vertical support columns is of sufficient length to be partially submerged and allow oscillation of the trough and crest of waves within its top and bottom ends.

16. The jacket frame column-stabilized offshore floating structure according to claim 14, further comprising:

a deck platform secured to said upper ends of said vertical support columns.

17. The jacket frame column-stabilized offshore floating structure according to claim 14, further comprising:

mooring line support means on said vertical support columns for supporting mooring lines thereon.

18. The jacket frame column-stabilized offshore floating structure according to claim 14, wherein

said weight adjusting means comprises at least one generally cylindrical second buoyancy capsule having enclosed top and bottom ends disposed in said interior near said lower ends of said vertical columns in vertically spaced relation to said at least one first buoyancy capsule.

19. The jacket frame column-stabilized offshore floating structure according to claim 18, wherein

said at least one first buoyancy capsule comprises a plurality of said first buoyancy capsules disposed in circumferentially spaced relation; and.

said at least one second buoyancy capsule comprises a plurality of said second buoyancy capsules disposed in circumferentially spaced relation and vertically spaced relation to said plurality of said first buoyancy capsules.

20. The jacket frame column-stabilized offshore floating structure according to claim 18, wherein

said at least one first buoyancy capsule and said at least one second buoyancy capsule are formed of materials with watertight integrity suitable for marine applications selected from the group consisting of steel, aluminum, titanium, fiber reinforced materials, and composite materials.

21. The jacket frame column-stabilized offshore floating structure according to claim 18, further comprising:

at least one generally cylindrical third buoyancy capsule having enclosed top and bottom ends disposed in said truss members interior connected with said pump means for selectively pumping water in and out thereof; wherein;

the water mass and weight of said at least one second buoyancy capsule and said at least one third buoyancy capsule are adjustably tuned to raise or lower the center of gravity of the entire mass of the structure with respect to its center of buoyancy according to ballast and variable or fixed loads including deck payloads, to stabilize the structure, and to compensate for different operational, environmental, survival and installation stages of the structure.